

ENVIRONMENTAL ASSESSMENT

BAKER CREEK DENSITY MANAGEMENT PROJECT
AND
WILDLIFE HABITAT ENHANCEMENT

EA Number 0R-086-03-02

June 3, 2003

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Bureau of Land Management
Oregon State Office
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CHAPTER 1.0 PROJECT SCOPE

For the reader's convenience, terms defined in the Glossary are shown in ***bold italics*** the first time they appear within the text of this ***environmental assessment*** (EA).

1.1 Project Location

The project location is T3S, R6W sections 13, 23, 24, 25, 35, 36; and T3S R5W sections 17, 19, 29, 31, 33; and T4S R6W sections 1, 2; and T4S R5W section 7 Willamette Meridian. These sections are located 7 miles west of the town of McMinnville. The project area is located primarily within the North Yamhill and Lower South Yamhill fifth-field watersheds, both of which are tributary to the Yamhill River. Six acres are within the Nestucca River fifth-field watershed.

See attached project location maps on figure 1 and 2.

The projects which are described in this EA are O&C lands (Oregon and California Railroad Land) and are in the ***Adaptive Management Area (AMA)*** and ***Riparian Reserve (RR)*** land-use allocation as identified in the *Salem District Record of Decision and Resource Management Plan (1995)*. This document is referred to as the ***RMP***. The objectives of the AMA are to develop and test new management approaches to integrate and achieve ecological and economic health. AMAs are intended to restore and maintain late-successional habitat, as well as provide a stable timber supply (RMP, page 19). RR are portions of watersheds where riparian-dependant resources receive primary emphasis. Activities within RR should not prevent or retard the attainment of ***Aquatic Conservation Strategy (ACS) Objectives***. The *Deer Creek, Panther Creek, Willamina Creek, and South Yamhill Watershed Analysis (WA)* (BLM, 1998) has been completed and provides guidance for most of the project area. Small parts of the project area are also covered by the *North Yamhill Watershed Analysis* (BLM, 1997) and the *Nestucca Watershed Analysis* (BLM and USFS, 1994). All recommendations given are consistent with all three documents. The north half of the project area is in a designated Reserve Pair Area for the Northern Spotted Owl. *Delineation and Management of Reserve Pair Areas within Oregon's Northern Coast Range Adaptive Management Area*, (BLM, 2000) (The RPA Guide) provides guidance for that part of the project area.

The project area does not contain designated 'critical habitat' for the marbled murrelet, or northern spotted owl. The project area does contain 'suitable' and 'dispersal' habitat for the northern spotted owl, and 'suitable habitat' for the marbled murrelet. The six acres of this project that are in the Nestucca are in a key watershed, the rest are not. The project is not in a key watershed. The project is in the municipal watershed for the communities of Carlton and McMinnville. The project area falls within the Evolutionarily Significant Unit (a distinct population segment) of upper Willamette steelhead and upper Willamette chinook which are Federally threatened species. The project also contains 'Essential Fish Habitat' for the Upper Willamette Chinook Salmon and Coho Salmon.

1.2 Background

During the summer of 2000, an *interdisciplinary team (IDT)* from the Tillamook Field Office, analyzed the Panther Creek, Baker Creek, and Upper Deer Creek 6th field watersheds, to identify activities that were “ripe” for decision. These were considered to be projects that could be implemented in the next 3 to 5 years. This planning process resulted in the identification of a variety of projects. In May of 2001, the Tillamook Field Manager selected from the list of possible management activities those actions, hereafter called the proposed action, described in chapter 2.3. The forthcoming *EA* will be analyzing these projects. This EA is intended to provide the Tillamook Field Manager sufficient information for reaching an informed decision and determining whether an action may have significant environmental effects. Should the selected action(s) have significant environmental effects, an *Environmental Impact Statement* will be prepared. If the selected action(s) do not have significant environmental effects, a *Finding of No Significant Impact* will be prepared.

1.3 Purpose of and Need for Action

1.3.1 Density Management in the Adaptive Management Area and in Riparian Reserves

Adaptive Management Area

The stands in the project area are between approximately 40 and 70 years old. Many of these stands seeded in naturally after logging occurred in the 1940's through 1960's. These stands can be placed into two general categories. The first are those stands that are relatively healthy, but are growing in dense, crowded conditions and tend to have a low species diversity, and a noticeable lack of structural diversity. The root systems and crowns of these trees tend to be poorly developed. This makes them susceptible to being blown over in large wind storms, or being infected by root pathogens.

The second are stands that are predominately Douglas-fir growing in dense, crowded conditions, but the also have significant infection centers of *Phellinus weirii* (*PW*). When susceptible trees, such as Douglas-fir and grand fir become infected with PW, they tend to have a greatly reduced rooting capacity, have thin and declining crowns, and eventually die and fall down. This process can occur anytime in a trees life cycle, but is often seen in 40 to 60 year old trees. It is estimated that approximately 41 percent of some stands in sections 35 and 1, are in active infection centers. The spread of the disease needs to be limited, and resistant and/or immune tree species should be introduced into the infected portions of the stand.

The Bureau of Land Management is managing these stands to eventually function as late-successional habitat. Features of late-successional habitat include: large old trees, a multi-storied canopy, large snags and pieces of down wood, and a diversity of tree species.

The watershed analysis recommends evaluating stands in the AMA land-use allocation to consider application of silvicultural treatments designed to enhance the development of late-seral habitat. The watershed analysis recommends doing density management in Douglas-fir stands that are 30 to 80 years old which have a Curtis Relative Density levels ranging from 55 to about 70, live crown ratios on potential “leave trees” of 35% or more, and less than 20% of the stand in *P. weirii* root rot centers with centers being well defined. (WA, pg. 81).

Riparian Reserves

RR are a land-use allocation that include an area which is one site-potential tree height on each side of streams that do *not* contain fish; and two site-potential tree heights in width on each side of fish-bearing streams and water bodies. The stands in the RR are growing in very dense conditions for the same reasons described for those stands in the adjacent AMA. The growth rates (especially diameter growth rates) of Douglas-fir trees within these densely stocked stands generally are slower, the length of the live crowns are shorter, and the length and diameter of the limbs are smaller than those growing under less crowded conditions. The understory development in these dense stands is also less. Continued understory development, however, will be further limited as the overstory density increases. Therefore, progress toward late-seral forest conditions would be slow. Snag recruitment within densely stocked stands is primarily a result of suppression mortality, with snags generally being recruited from the smaller trees within the stand. In general, there is very little, if any conifer regeneration in the understory. The few conifers which exist in the understory of some stands can be expected to decline in vigor and exhibit a very slow growth rate or die because they are no longer able to survive under the increasingly dense overstory shade.

Density management in the RR (outside of the streamside “no-treatment” buffers) is proposed for the following reasons: maintain or increase the growth rates, vigor and crown development of many of the reserve (residual) trees, thus speeding up the general process of developing larger trees for eventual recruitment as large wood into the riparian area and potentially into the stream itself; provide improved growing conditions for any conifer regeneration present in the understory, and the development or stimulation of vigorous shrub and herbaceous understory vegetation; increase the wind-firmness of the reserve trees; add to the long-term diversity of stand characteristics throughout the RR and across the general project area; increase the level of structural complexity within the RR; and be consistent with the objectives of the ACS.

The watershed analysis recommends evaluating stands in the RR land-use allocation to consider application of silvicultural treatments designed to enhance the development of late-seral habitat. Potentially beneficial treatments identified in the watershed analysis include (1) release existing conifers over-topped by hardwoods, (2) thin well-stocked and over-stocked mid-aged conifer stands outside “no-cut” buffers in Riparian Reserves to encourage remaining conifers to attain larger sizes in a shorter time period than would occur through the natural self-thinning process. Variable density thinning could also be used to enhance structural complexity of relatively dense conifer stands; (3) no-cut buffers should be left along all intermittent and perennial stream channels...during ground disturbing activities such as timber harvest and road construction, and

(4) use BMP's for ground-based logging methods within Riparian Reserves to minimize soil disturbance and compaction (WA., ppgs. 74-85).

Road Management

The Deer Creek, Panther Creek, Willamina Creek, and South Yamhill Watershed Analysis contains a number of recommendations that are associated with watershed restoration (see pages 74-85). A partial list of these recommendations includes: (1) After working in a heavy infestation of noxious weeds, and prior to moving to Riparian reserves or LSR, the equipment shall be washed to remove all dirt and adhering vegetation; (2) Roads located adjacent to the headwaters of Baker Creek and Panther Creek should be considered for obliteration or relocation; and (3) Stand manipulation contracts may offer opportunities to obliterate roads within the contract area. (WA., ppgs. 83-84).

1.3.2 Wildlife Habitat Enhancement

The watershed analysis recommends evaluating stands in the AMA and RR land-use allocations to consider application of silvicultural treatments designed to enhance the development of late-seral habitat. Potentially beneficial treatments identified in the watershed analysis include: (1) in dense stands, create small forest openings in stands where natural reproduction is established thereby releasing trees for understory development; (2) inoculate some trees with heart rot-causing fungi in the crown for the development of living trees beneficial to primary cavity excavators; (3) when there is a need to add large amounts of fresh down Douglas-fir trees or logs to increase the amounts of coarse woody debris, add them in a series of events spaced several years apart (WA., ppgs. 74-85).

The RPA Guide (June, 2000) recommends that *coarse woody debris (CWD)* management within the stands of suitable habitat occur, and that a specific strategy be developed to meet high levels of CWD as defined in the Late-Successional Reserve Assessment (LSRA). The high target level of CWD for the stands proposed for treatment is 3200 - 5940 cubic feet per acre with at least half of the volume being accounted for in snags. All of the stands proposed for treatment are dominated by Douglas fir and are between approximately 80- and 120-years-old. These stands are generally deficient in CWD.

The desired condition throughout the project area is to enhance and maintain biological diversity and ecosystem health in order to contribute to healthy wildlife populations. Snags, down wood and large trees would be essential components to this desired condition.

A few of the recommendations from the watershed analysis for mature stands lacking snags and/or large down wood include: (1) create snags over time by girdling some trees at DBH and others in the tree crown thus creating a dead topped tree; (2) when there is a need to add large amounts of fresh down Douglas-fir trees or logs to increase the amounts of coarse woody debris, add them in a series of events spaced several years apart. (WA., pg. 77)

1.3.3. Project Objectives

By comparing existing resource conditions to desired resource conditions and the management objectives contained in the *Deer Creek, Panther Creek, Willamina Creek, and South Yamhill Watershed Analysis* (BLM, 1998), RMP, and the Northern Coast Range AMA guide, the IDT identified several management opportunities. The following objectives were developed to address those opportunities:

- a. Increase the growth rates and diversity in younger stands. This will help accelerate the development of some late-successional forest habitat characteristics: such as a diverse canopy structure, and large trees. Some of the larger diameter trees resulting from this action could become sources of high quality large snags and down wood in the future.
- b. Improve wildlife habitat in areas that already have some late-successional forest habitat characteristics within the boundaries of the RPA. This would be primarily done through the creation of snags, down wood and individual tree release.
- c. Increase levels of CWD along some stream reaches where larger stream recruitment potential is poor.
- d. Attempt to control or limit the spread of *Phellinus weirii*, so that those parts of the planning area that are heavily infected can attain late-successional forest.
- e. Retain existing desirable habitat features to the greatest extent possible.
- f. Reduce road density and existing levels of compaction by removing roads that are no longer needed.
- g. Do not increase OHV use, or increase opportunities for illegal dumping in the project area.
- h. Provide social and economic benefits to local communities.
- i. Management actions should maintain the existing condition or lead to improved watershed conditions in the long term, to meet the intent of the ACS objectives.

1.4 Decision to be Made

The Tillamook Field Manager is the official responsible for deciding whether or not to prepare an environmental impact statement, and whether to approve the density management thinning, and the wildlife habitat enhancement projects as proposed, not at all, or to some other extent. More than one decision may result from this environmental analysis.

1.5 Issues and Units of Measure

In compliance with NEPA, the proposed action was listed in the April and July 2002 editions of the *Salem District Project Update* which were mailed to over 1,000 addresses, as well as a letter mailed on August 1, 2002 to 106 potentially affected and/or interested individuals, groups, and agencies (Project Record, Document 21 and 22). A presentation was also given at the Yamhill Watershed Council meeting on August 7, 2002, which was attended by eleven people (Project Record, Document 24). A total of three letters were received as a result of this *scoping* (Project Record, Documents 23, 25, 26). All public input was assigned a number and filed in the Project Record. The IDT reviewed, clarified, and assessed the public comments. The disposition of those comments are contained in Appendix 1. A field trip was given on February 4, 2003 to two biologists from the US Fish and Wildlife Service.

Considering public comment, the IDT did not identify any major issues with either the density management project or the wildlife habitat enhancement project. The four elements of the environment (i.e., water, vegetation, wildlife, and fisheries) as well as soils are the subject of the environmental analysis described in Chapter 3. There is a specific unit of measure associated with each element that has been selected to evaluate attainment of project objectives, and/or describe environmental impacts.

1.5.1 Soil

The units of measure selected include: acres of soil compaction, acres of soil disturbance, and a narrative of the effects of an action on soil productivity.

1.5.2 Water

The units of measure selected include water quality, and basin hydrology including stream flow and channel condition.

1.5.3 Vegetation

Vegetation resources have been divided into three categories to facilitate analysis. These categories include special status/special attention species, noxious weeds, and forest vegetation (within AMA and RR land use allocations). The units of measure selected is a narrative.

1.5.4 Wildlife

The units of measure used for impact analysis relative to wildlife resources include the following: Species listed under the ESA - A narrative discussion describing the expected impacts as it relates to the potential for disturbance; impacts to suitable habitat; and in the case of the spotted owl, impacts to dispersal habitat. Survey and Manage mollusks - Maintenance and enhancement of the species at the site. Survey and Manage red tree voles - Protection of the physical integrity of the nest site to maintain its population and provide for expansion of the number of active nests at the site. Bureau 6840 Special Status Species Policy Species - Elevation of their status to any higher level of concern including the need to list under the ESA. Northwest

Forest Plan Bats - A narrative discussion describing the expected impacts. Other Species of Concern - Roosevelt elk and black-tailed deer - A narrative discussion describing the expected impacts of the proposed action as it relates to the potential for disturbance and impacts to elements of their habitat.

1.5.5 Fisheries

To facilitate analysis the fisheries resources have been divided into four categories (i.e, fish species listed or proposed under ESA, designated Critical Habitat for fish species listed under the ESA, and BLM Manual 6840 policy species. The unit of measure selected for each fish species listed or proposed under the ESA is a narrative that describes whether there would be: 1/ no effect; 2/ may affect, not likely to adversely affect; or 3/ may affect, likely to adversely affect. The unit of measure selected for designated Critical Habitat for fish species listed under the ESA is a narrative that describes whether there would be: 1/ no effect; 2/ may affect, not likely to adversely affect; or 3/ may affect, likely to adversely affect. The unit of measure selected for the BLM Manual 6840 policy fish species is a narrative that describes whether an action would result in a trend toward federal listing or loss of population viability. The unit of measure selected for Essential Fish Habitat under the Magnuson-Stevens Act is a narrative describing whether the habitat is adversely affected.

CHAPTER 2.0 ALTERNATIVES

2.1 Alternative Development

Because the scoping effort that is described in chapter 1.5 did not result in the identification of any major issues, there was no procedural requirement to develop additional action alternatives. As such, the alternatives approved by the responsible official include the “proposed action” alternative, which will be referred to as Alternative 1, and the required “no-action” alternative, referred to as Alternative 2.

2.2 Description of Alternatives

2.2.1 Alternative 1 (Proposed Action)

The proposed action would consist of density management thinning on 647 acres and wildlife habitat enhancement on 298 acres. In order to complete the density management, approximately 1.6 miles of new road would be constructed, and 1.6 miles of road would be reconstructed. All of the new road construction, and all of the road reconstruction would be temporary, natural surfaced road, which would be decommissioned using a subsoiler and excavator after project completion. The net decrease in road density at project completion would be approximately 1.6 miles.¹ The proposed action would be implemented using the *Best Management Practices (BMP)*s as described in Appendix C of the RMP. The BMPs are intended to improve water quality and soil productivity, and prevent or mitigate adverse impacts while meeting other resource objectives.

2.2.1.1 Density Management Thinning

In order to meet objectives a, d, f, g, and h as described in Section 1.3.3., the Bureau of Land Management proposes to perform density management thinning, using a commercial timber sale on approximately 647 acres, located in 7 different sections within the AMA and RR land-use allocations. The project is expected to result in the production of 8.4 mmbf of commercial timber products. Two timber sales would be the tool through which the habitat development work is accomplished. The project is anticipated to be implemented (sold) during fiscal year 2004 and fiscal year 2005. The density management treatments are summarized in Table 1. Projected haul routes are shown on figure 2.

¹ Approximately 2.5 miles of road that are located in or adjacent to timber sale units and were analyzed in the Yamhill Road Stabilization EA (2001), will also be decommissioned at the completion of the project.

Table 1. Baker Creek Project - Alternative 1
Summary of the Proposed Density Management Treatment Units
by Yarding System, Land Allocation and Acreage

Unit Number	Yarding System	Land Allocation	Acres	Unit Number	Yarding System	Land Allocation	Acres
25-1	cable	AMA	79	1-1	cable	AMA	40
	cable	R.R.	55		cable	R.R.	23
	ground	AMA	29		ground	AMA	33
	ground	RR	4		ground	RR	7
Unit Total			167	Unit Total			103
29-1	cable	AMA	6	1-2	cable	AMA	6
	cable	R.R.	17		cable	R.R.	8
	ground	AMA	8		ground	AMA	9
	ground	R.R.	1		ground	RR	2
Unit Total			32	Unit Total			25
35-1	ground	AMA	4	7-1	cable	AMA	52
	ground	R.R.	1		cable	RR	20
Unit Total			5		ground	AMA	59
35-2	cable	AMA	15		ground	RR	8
	cable	R.R.	28	Unit Total			139
	ground	AMA	32	7-2	cable	AMA	14
	ground	RR	10		cable	RR	20
Unit total			85		ground	AMA	11
31-1	ground	AMA	14		ground	RR	8
	ground	R.R.	2	Unit Total			53
Unit Total			16	7-3	cable	AMA	11
33-1	cable	AMA	9		cable	RR	0
	cable	R.R.	0	Unit Total			11
	ground	AMA	0				
	ground	RR	2				

Unit Total			11	
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Table 2. Summary of the information associated with road construction, road reconstruction, and decompaction. All measurements are in feet and are approximate measurements.

Section	New Road construction temporary*	Road reconstruction**	Change in road density after project competition
25	0	3490	-3490
29	108	0	0
35	3580	0	0
31	0	0	0
33	1267		0
1	2340	2220	-2220
7	695	2449	-2449
Total	7990	8159	-8159

* Since “temporary” roads will be decommissioned at the completion of the project, compaction levels are assumed to remain the same. ** Roads that are “reconstructed”, are existing roads that need to be brought up to standard to be used for logging, they will be decompacted after use, so a net decrease in compaction is assumed.

2.2.1.1.1 Mitigation Measures

The following mitigation measures apply to the density management and road management work described in section 2.2.1.1. The Bureau of Land Management utilizes the best available information and research from institutions and universities throughout the Pacific Northwest in developing BMPs for forest management practices to protect water quality and soil productivity. The specific design features of this project would help meet the management objectives contained within the RMP and are in compliance with the standards and guidelines contained within the *Northwest Forest Plan*.

These design features include:

1. *To protect stream bank stability and water temperature*

- A minimum 50 foot “no-harvest” buffer will occur along both sides of non-fish-bearing streams and a minimum 100 foot “no-harvest” buffer along both sides of fish-bearing streams and wetlands less than one acre. If there are steep inner gorges present, these can be used to define “no-harvest” buffers as long as the minimum widths are maintained. (an exception to this will be trees that are released in the *Riparian zone* as a part of AMA learning objective #2 (described on page 19).

- All logs will be fully suspended over streams and for 25 feet on either side over the adjacent banks.

2. *To protect against sediment entering the streams and erosion*

- At the completion of the project, the decommissioned roads would be blocked using a variety of methods designed to limit OHV use. These methods may include the strategic placement of boulders or root wads, or types of earthen barriers.
- New skid trails and ground-based equipment would generally be prohibited within RR. It is anticipated that trees cut in RR would be winched to existing roads or to locations outside of the RR.
- New temporary roads would be located outside of Riparian Reserves.
- In areas designated as ground-based logging, cable logging systems can be used.
- Hauling and logging would only occur during the dry season, generally July through September, as determined by the **Authorized Officer**.
- Log lengths would be limited to 44 feet (40 feet plus trim) to reduce damage to the reserved trees during yarding operations. If determined necessary by the Authorized Officer, log lengths would be reduced on specific corridors to achieve full-suspension over water courses.
- Cable yarding operations would be conducted in such a manner as to assure that associated impacts would not exceed those allowed under the Best Management Practices identified in the Salem RMP (Appendix C-1 and C-2).
- Restrict yarding in riparian areas to corridors that are perpendicular to streams (or as close as possible to 90 degrees).
- All natural surface roads would be water barred and seeded with a native grass.
- Road decommissioning would occur during the dry season (generally June through September).

3. *To limit the amount of soil disturbance to 10% or less of the project area.*

- Confine ground-based activities to designated skid trails. These skid trails would be approximately 12 feet in width and 150 feet apart.

- In areas to be logged with ground-based equipment, use existing skid roads to the extent possible to reduce the potential soil impacts by concentrating them on areas that have already been impacted.
- Generally, the skyline corridors would be placed no closer than 150 feet apart at one end and would be 12 feet wide.
- The number of landings and their size would be kept to a minimum required to reasonably harvest the units. Landings would be located by the purchaser and approved by the Authorized Officer.
- One-end suspension on all logs is required in cable logging areas, and in ground-based logging areas, where feasible.

The purchaser may elect to cut and yard by a harvester/forwarder type equipment provided that the following measures are met:

- a. Except for manually felled trees which exceed the harvester capability, timber would be felled, limbed, bucked, and pre-bunched by a self-propelled, mechanical, track-mounted or rubber-tired harvester with a minimum boom reach of 27 feet using a single grip rotating harvesting head. The harvester would have a ground pressure rating of 6 psi (pounds per square inch) or less.
- b. The forwarder would be all wheel drive, capable of self-loading and unloading, and have rear tires or track type devices greater than 18 inches in overall width. Log forwarders with GVWs (Gross Vehicle Weight) greater than 15,000 pounds would have a minimum of three load-bearing axles.
- c. Forwarding operations would be restricted to trails approved by the Authorized Officer. Generally, forwarding trails would not exceed 15 feet in total width, and would be no closer than 100 feet, center to center, where parallel trails are used. The location of the harvester trails would be marked on the ground with flagging by the Purchaser and approved by the Authorized Officer prior to felling and yarding operations.
- d. Harvester roads would generally not exceed 15 feet in width, nor be spaced less than 50 feet apart from center to center.
- e. To minimize compaction and displacement, equipment would be confined to existing skid trails and roads as much as possible, minimize the number of forwarder passes, and the created slash from limbing and bucking would be placed onto the skid trails for the harvester and forwarder to walk on.

f. Yarding would be done with equipment capable of lifting and carrying logs fully suspended off the ground.

g. Log landings and transfer points would be limited to existing roads and turnouts, unless otherwise agreed to by the Authorized Officer.

4. *To protect Riparian habitat, desirable habitat features and stand diversity.*

- Retain and protect existing coarse woody debris on site (includes down wood and snags).
- Any snags that are cut or are knocked over during logging would be left on site for coarse wood enhancement.
- Retain any conifer trees greater than or equal to the diameter limits shown in Appendix 2; Table DL-1 that are felled to create cable yarding corridors or skid trails on site for coarse wood enhancement.
- Follow the density management treatment strategies, coarse wood strategies, and planting and precommercial thinning strategies that are outlined in Appendix 2.
- Surround existing large snags (greater than 18" dbh) or other snags being actively used by wildlife with two or more leave trees to protect them from logging damage.
- Reserve two larger-diameter Douglas-fir trees spaced eight (8) feet or less apart at the rate of approximately one such "group" per acre where they occur.
- Retain all hardwoods (no diameter limit) in obvious *P. weirii* root disease centers.
- Retain existing western hemlock, western redcedar, and grand fir understory trees.
- Reserve large trees with deformities at least in proportion to their occurrence in the stand.
- Retain all trees within the "no-harvest" riparian buffers which are cut to facilitate the construction of yarding corridors as CWD.
- Felling and yarding operations would be restricted during the peak bark-slip period (generally May 1 to July 15) if excessive leave tree damage occurs, as determined by the Authorized Officer.

5. *To protect wildlife species and rare plants*

- No potentially suitable murrelet, northern spotted owl or bald eagle nest trees would be felled as a part of the Baker Creek project and where possible, no

openings would be created within one tree length surrounding a potential murrelet nest tree.

- Any newly discovered (as per the Pacific Seabird Group Marbled Murrelet Technical Committee protocol) Marbled Murrelet sites would be protected by a 0.5 mile radius buffer on all contiguous existing and recruitment federal habitat.
- Prior to entering the sale area each work season, or before returning to the watershed after leaving it, any heavy machinery (with the exception of log trucks and pick-up trucks used for daily personnel travel) would have all dirt and adhering vegetation cleaned from it to prevent the spread of noxious and/or invasive weeds.
- Prevent damaging the *Stenocybe clavata* site by directionally felling trees, not dragging trees over the site, and avoiding disturbance to similar substrates to allow potential propagation to occur.
- For the identified Oregon Megomphix and Puget Oregonian sites, habitat areas would be created. These would have the following characteristics:
 1. In areas where the post harvest canopy closure within 200 feet of the site center is expected to be 60% or greater, maintain a no-cut, no-entry buffer with a radius of at least 50 feet. No patch cuts would occur within a 200-foot radius from the site center.
 2. In areas where the post harvest canopy closure within 200 feet of the site center is expected to be less than 60%, maintain a no-cut, no-entry buffer of at least a 100-foot radius. No patch cuts would occur within a 200-foot radius from the site center.
 3. Reserve all hardwoods within a 200-foot radius from the site center.
- Daily time restrictions (two hours after official sunrise until two hours before sunset) would be required on hauling on Von Road between April 1 and September 15.
- An uncut-buffer of approximately 15 feet in width would be maintained along selected roads in section 25 and 35, to increase the level of security and reduce harassment for wildlife utilizing the area. (See project record, document #33 for map location.)

6. *To reduce the amount of smoke and dust, and damage from burning:*

- Burning would be conducted under good atmospheric mixing conditions to lessen the impact on air quality in designated areas.
- To further mitigate fire risk, project area roads should be posted closed to all off road motor vehicle use during the “closed” fire season the first year following harvest activities, while fuels are in the “red needle” stage. These designated areas should be monitored for the need of additional closures during subsequent years during periods of high fire danger.
- Landing piles should be located as far as possible from green trees to minimize damage.
- Hand piles would be covered to facilitate the consumption of fuels during the high moisture fall/winter burning periods.
- Hand piles should be located at least 10 feet from green trees, where possible, to minimize damage.
- Lopping and scattering of fuels may be incorporated in areas where fuel loading is relatively heavy but not heavy enough to warrant hand piling or burning.
- Pullback of fuels may be incorporated in areas where fuel loading is relatively light (especially along roads) and not heavy enough to warrant hand piling or burning.

To protect cultural resources:

- Survey techniques are based on those described in Appendix D of the *Protocol for Managing Cultural Resource on Lands Administered by the Bureau of Land Management in Oregon*. Post-project survey would be conducted according to standards based on slope defined in the Protocol appendix. Ground disturbing work would be suspended if cultural material is discovered during project work until an archaeologist can assess the significance of the discovery.

2.2.1.2 Wildlife Habitat Enhancement

In order to meet objectives b, c and h as described in section 1.3.3., the Bureau of Land Management (BLM) proposes wildlife habitat enhancement on approximately 298 acres, located in 6 different sections. These areas are all ‘suitable habitat’ within the RPA. The wildlife habitat improvement work is summarized in Table 3. Specific treatments are further described in Appendix 6, pages 27-31.

The project is expected to utilize a number of techniques of creating CWD including the felling of green trees, girdling green trees at the base as well as in the crown, and potentially inoculation

with a heart rot fungus. It is expected that the average tree to be treated would be about 22" DBH.

Table 3. Treatment Area Summary. This table summarizes the treatment area information associated with the Wildlife Habitat Improvement proposals.

Table 3. Summary of the Proposed Wildlife Habitat Enhancement Treatments						
Unit #	Unit size (acres)	Total # of trees girdled within the crown	Total # of trees girdled at the base	Total # of trees topped	Total # of trees felled	Acres of Potential Interplanting
W17-1	15	15	-	-	15	-
W17-2	5	5	-	-	-	-
W17-3	16	16	-	-	16	-
W13-1	55	165	-	-	55	-
W19-1	26	26	-	-	-	-
W24-1	46	138	-	-	46	-
W23-1	60	30	-	30	-	30
W23-2	18	-	-	-	-	18
W23-3	10	-	-	-	-	10
W23-4	17	34	-	-	-	-
W25-1	4	-	-	8	-	-
W25-2	26	-	26	-	26	-
Totals	298	429	26	38	158	58

2.2.1.2.1 Mitigation Measures

The following mitigation measures pertain to the Wildlife Habitat Enhancement work described in section 2.2.1.2.

- Projects which result in the generation of noise above the ambient level or require climbing more than 25 feet into the canopy, would be implemented between August 6 and February 28.
- Between August 6 and September 15, work would begin two hours after sunrise and end two hours before sunset, within .25 miles of unsurveyed marbled murrelet habitat.
- No tree which is potentially suitable as a nest tree for the spotted owl or marbled murrelet, or contains a suspected nest of any other bird or mammal would be treated. In addition, no tree adjacent to a potentially suitable spotted owl or marbled murrelet nest tree or any tree containing a suspected nest of a bird or mammal would be treated.

- Felling of trees would be conducted in such a way as to assure no damage to potentially suitable spotted owl or marbled murrelet nest tree, or any tree containing a suspected nest of a bird or mammal.
- Treated trees would generally not be located within approximately 150 feet of an open road to reduce the potential for the creation of safety hazards and/or the likelihood that the material would be stolen or sold as firewood.
- In addition, created snags would generally be placed at least 150 feet from any property line boundary where BLM land abuts private ownership. The proposed treatments vary by treating 1 to 4 trees per acre; these trees in general would be scattered throughout the treatment unit however “clumps” of up to 3 treated trees could be created in some situations.
- The project proposes to treat up to 110 acres of Riparian Reserves; treatments may be applied down to the stream channel.
- All felled trees would be selected and felled in such a way as to minimize impacts to existing decay class 3, 4, and 5 down woody debris which is greater than 15 inches in diameter.
- Within five Wildlife Habitat Enhancement treatment units, a qualified field botanist or trained staff would be involved in selecting all trees to be felled or girdled to avoid impacting survey and manage Lichen species. If qualified personnel are not available to complete the work indicated in this design feature, the five Wildlife Enhancement units would be surveyed according to survey protocol for component 2 Lichens (v. 2.0) prior to any project activity. Units that would require pre-project lichen surveys or botanical support during tree selection are; W17-1, W17-3, W13-1, W24-1, and W25-2.

2.2.1.3 Adaptive Management Area Learning Objectives

Adaptive Management Areas are landscape units designated to encourage the development and testing of technical and social approaches to achieving desired ecological, economic, and other social objectives (Northwest Forest Plan (*NWFP*), appendix D-1). The primary technical objective of the AMAs are development, demonstration, implementation, and evaluation of monitoring programs and innovative management practices that integrate ecological and economic values (*NWFP*, appendix D-3). In the spirit and guidance provided by this direction, the IDT developed two opportunities for learning and innovation that are being incorporated into the proposed action, and are being called “AMA learning objectives”. These AMA learning objectives would be monitored by appropriate Resource Specialists and necessary information would be stored at the Tillamook Resource Area Monitoring database. Further information on the AMA learning objectives is available in attachment 1 and 2, of Appendix 2.

AMA Learning Objective #1: Assessment of techniques in creating late-successional forest in areas that are heavily infested with laminated root rot (*Phellinus weirii*).

We propose to test the effectiveness of two different silvicultural treatments for controlling and maintaining the levels of *Phellinus weirii* in the stand. One method would be done in section 25 in the RPA, and another would be done in section 1 which is outside of the RPA. In Unit 25-1, a heavy thinning is proposed for the infested portions, leaving a resulting overstory canopy closure of at least 30%, with up to 10% of the area in patch-cut openings of up to ½-acre in size. Susceptible trees that surround the boundary of obvious infection centers would be removed to reduce the potential for disease to spread to adjacent healthy parts of the stand through root contacts (bridge tree removal). Leaving infected trees standing and having them blow over and removing a large part of the root system may be an effective means of reducing the amount of inoculum on the site. Windthrow, however, encourages Douglas-fir beetle populations to build up. Because of the heavy disease levels in the local area (diseased trees are under stress, and therefore are more susceptible to attack), a fair amount of subsequent Douglas-fir beetle damage may occur.

In Unit 1-1, susceptible trees within heavily infested portions of the unit would be cut and removed, creating a series of patch cuts of up to 3 acres in size. Susceptible trees that surround the boundary of obvious infection centers would be removed to reduce the potential for disease to spread to adjacent healthy parts of the stand through root contacts (bridge tree removal).

On both units, competing brush (*not existing hardwood trees—all hardwood trees are immune to P. weirii*) would be cut to a 6-inch stump height and bucked into lengths of 5 feet or less. Cut brush and logging slash would be hand-piled and burned (swamper burning) during the wet season or the bucked slash less than 6 inches in diameter at the small end would be scattered so that the slash depth is one foot or less to facilitate reforestation. Planting would be done with disease-resistant and/or immune tree species. Use large-sized planting stock (1-1, P-1, or larger) and tube all planted trees for animal damage protection. Follow-up vegetation management treatments would be done to promote the survival and growth of the newly planted seedlings.

Monitoring: Disease surveys would be conducted at 1, 5, and 10 years after treatment to evaluate the relative effectiveness of these two disease management strategies in reducing current and future disease-related impacts as well as and promoting the attainment of older forest characteristics. Surveys could be done using permanently located or randomly selected plots. Photo taken from permanently located photo points would also be very helpful in assessing the effectiveness of these two approaches.

AMA Learning Objective #2: Assessment of the costs and benefits of creating large trees in selected riparian zones.

The objective of this field trial is to see if individual large-diameter trees can be developed by relatively wide thinning in selected areas within the Riparian Reserve, including a portion of the 50-foot “no-cut” buffer, along an intermittent, non-fish-bearing stream without causing

unacceptable short-term impacts to the stream. Six areas were chosen that currently have dense conifer stands in the riparian zones. Within each area, two of the largest-diameter trees (usually within about 25 feet of each other) were selected as the leave trees (trees to be left) and flagged with orange flagging. Two of the larger trees near the leave trees were selected to be converted into snags for wildlife habitat enhancement and flagged with yellow flagging. Then a thinning boundary of about 35 to 40 feet around the selected leave trees was flagged with blue flagging. The total treatment area for all six thinning patches is approximately 0.7 acres. All of the trees except those designated as leave trees or trees to be converted into snags would be cut and removed.

Monitoring: Pre-and post-treatment solar radiation monitoring sites be established along the stream to determine if there is an increase in solar radiation reaching the stream as a result of the treatment. If there is an increase in solar radiation, determine the duration of the increase over a period of 10 years. It may be useful to collect data at the same time of year from the same monitoring sites at the following intervals: (1) prior to treatment, (2) one year after treatment, (3) five years after treatment, and (4) 10 years after treatment. The five- and 10-year measurements may be deleted if there is no increase in solar radiation at the first-year post-treatment measurement. In addition, pre- and post-treatment photos may be useful and could be taken from the same locations and at the same time the solar radiation data is collected.

2.2.2 Alternative 2 (No Action)

The BLM would not implement the watershed restoration, wildlife habitat enhancement or density management thinning projects at this time. The local plant and animal communities would be dependent on and respond to ecological processes that would continue to occur based on their existing condition.

This alternative serves to set the environmental baseline for comparing effects of the action alternative.

2.3 Monitoring

In addition to the monitoring described in section 2.2.1.3. for the AMA learning objectives, monitoring would occur in accordance with the Salem RMP.

CHAPTER 3.0 AFFECTED ENVIRONMENT

3.1 Introduction

This Chapter shows the present condition (i.e., affected environment) within the project area. The “no action” alternative sets the environmental baseline for comparing effects of the action alternative.

Appendix 4 contains a description of past, present, and reasonably foreseeable future actions.

For a full discussion of the physical, biological, and social resources of the Salem District, refer to the FEIS (Final Environmental Impact Statement), dated September, 1994, for the Salem RMP. The discussion in this EA is site-specific and supplements the discussion in the Salem District FEIS.

3.2 Soil

The predominant soils within the project area are the Hembre, Melby, and Olyic series. They are deep (more than 40 inches), acidic, high in organic matter, usually moist (Udic), mild temperature (Mesic), moderately permeable, and well drained. Their soil profiles typically consist of about a foot thick of silt loam surface over a silty clay loam subsoil that extends down to bedrock. The Olyic series, the most prevalent soil, weathered from basalt, has a dark reddish brown surface and typically occurs on convex narrow ridgetops, and sideslopes. Melby series formed from sedimentary rock and typically occurs on rolling hillslopes and benches, commonly on concave slopes. Hembre series formed from basalt, has an ashy surface, commonly on smooth, broad convex ridgetops and benches.

Also within the project area are small areas (inclusions) of poorly drained soils in swales, depressions, and adjacent to streams and shallow gravelly/rocky soils found mainly on steep, convex mountain sideslopes.

Proposed timber harvest units are on generally stable hillslopes, benches, and ridges. These soils are highly productive (Site Class 2, Site Index 170) due to favorable soil chemical and physical properties and the mild climate.

3.3 Water

1. Physical Setting

The project area lies on the eastern slope of the northern Oregon Coast Range, bordered by the Willamette Valley on the east. Elevations range from 650 to 2,200 feet in the project area and up to 2,600 feet in the Baker Creek watershed. The area consists of low rugged mountains composed of gently sloping ridges that are highly dissected by many draws, narrow valleys, and

steep river canyons. Outside the major canyons, steep hillslopes are usually short. The upper watershed is underlain primarily by siltstone and tuffaceous sandstone (Yamhill formation) and younger intrusive diabase and basalt rocks formed in a marine environment during the Middle to Upper Eocene. Small areas of older basalt pillows and sheet flows (associated with the Siletz River Volcanics) are located in deeply incised sections of Baker Creek and large tributaries. There are also some areas of ancient landslide deposits.

The project area is located primarily within the North Yamhill and Lower South Yamhill fifth-field watersheds, both of which are tributary to the Yamhill River (Table 4). The density management project area also includes six acres within the Nestucca River fifth-field watershed.

Table 4. Area of Proposed Treatment by Fifth- and Sixth-Field Watershed

Fifth-Field Watershed	Sixth-Field Watershed	Proposed Density Management Treatment Area (acres)	Proposed Wildlife Habitat Enhancement Treatment Area (acres)
North Yamhill River	Baker Creek	480	30
North Yamhill River	Panther Creek	45	241
North Yamhill River	Haskins Creek	0	27
Lower South Yamhill River	Upper Deer Creek	116	0
Nestucca River	Upper Nestucca River	6	0

The analysis area is typical of the Oregon Coast Range in both climatic and hydrologic features. Temperatures are mild, winters are wet and the summers cool and mostly dry. Annual precipitation falls mostly between November and March and averages about 80 inches, increasing with elevation. There is little natural water storage, consequently streamflows respond quickly to rainfall and are notably higher in winter than summer. Most peak flows are produced from large, moderately intensive winter storms that last several days. Subsurface flow is the dominant storm runoff mechanism. Overland flow rarely occurs on undisturbed forest floor due to the high soil infiltration and permeability rates. All the proposed treatment areas are within the rain-dominated zone, and the higher elevation areas in the watersheds that are in the rain-on-snow zone would be unaffected.

2. Land Use

The primary land uses within the analysis area are forest management and agriculture, with a small amount of rural residential and urban development (Table 5). Urban areas within the watershed include McMinnville, Carlton, and Yamhill. BLM manages from 6% to 58% of the land within the affected sixth-field watersheds. Road densities within the Baker Creek, Panther Creek, Haskins Creek, Upper Deer Creek and Upper Nestucca River 6th field watersheds are 5.4, 6.2, 6.3, 4.3 and 5.5 miles/mi², respectively.

Table 5. Land Use within the Baker Creek Project analysis area.

Sixth-Field Watershed	Total Acres	Forestry Zoning (acres)	Agricultural Zoning (acres)	Rural Residential Zoning (acres)	Urban Zoning (acres)	BLM Lands in Sixth-Field (acres (% of total))
Baker Creek	17,332	5,387	10,441	1,087	417	1,695 (10%)
Panther Creek	17,324	7,009	10,315	0	0	2,045 (12%)
Haskins Creek	10,351	6,405	3,946	0	0	665 (6%)
Upper Deer Creek	14,202	7,259	6,847	96	0	1,468 (10%)
Upper Nestucca River	12,584	12,584	0	0	0	7,284 (58%)

3. Beneficial Uses

The primary beneficial uses of water within the project area are public and private domestic water supply, irrigation, fisheries and wildlife. In general, the most sensitive of these uses is for domestic and community drinking water and habitat for rearing and spawning cold water fishes. The only known municipal water diversion is at Carlton Reservoir on upper Panther Creek. The reservoir is the sole provider of drinking water for the city of Carlton, with a population of about 1,570. The nearest downstream domestic water right is approximately one mile below the project treatment area. Of the 243 valid surface water rights in the watersheds, 111 are for irrigation, 34 domestic, 16 fish, and 35 storage (Oregon Water Resources Dept.).

4. Water Quality

The Oregon Department of Environmental Quality (DEQ), as required by Section 303(d) of the 1972 Federal Clean Water Act, is responsible for identifying stream segments in the state that do not meet their designated beneficial uses and the parameters within each stream segment that fail to meet the Act's water quality standards. Stream segments and parameters that exceed water quality standards for this region are summarized in the table below. The North Yamhill River from its mouth to Turner Creek is listed as Limited for bacteria, flow modification (low flows) and temperature (summer rearing) (Final 1998 303(d) List). DEQ also maintains a list of water bodies for which there are water quality concerns but available data is lacking. DEQ has concerns for Panther Creek for excessive bacteria and sediment.

There is a lack of adequate structure in the form of large woody debris as the result of past fires and past and present land uses throughout these watersheds. Past and present land use practices,

primarily timber and agricultural practices have diminished riparian vegetation that was historically occupied by large conifer trees. Riparian vegetation plays a critical role in maintaining healthy watersheds. It provides shade, stabilizes stream banks, filters pollutants and sediment, and provides large woody debris. As a result, the hydrologic processes of the watershed reached the point that the most of the stream channels in the watershed are not in “proper functioning condition.”

The absence of riparian vegetation has resulted in a lack of adequate shading and limited recruitment of LWD. Removal of LWD from channels, loss of riparian vegetation, diking and draining wetlands, increased sediment, bank armoring and channel straightening and other actions have greatly simplified instream habitats. Future management actions on federal land will be in accordance with the Salem RMP which contains management direction to maintain or restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems.

Forest roads are most likely the largest source of fine sediment in the watershed. Sediment is generated primarily when roads are used during the rainy season.

Additional water quality parameters (e.g., nutrients, dissolved oxygen, pesticide and herbicide residues, etc. [U.S. EPA 1991]) are unlikely to be affected by the proposed action and were not reviewed for this analysis.

3.4 Vegetation

3.4.1. Special Status, Special Attention Species and Noxious Weeds

Contracts for Botanical surveys for the Baker Creek project area began in July 2001. Additional surveys for fungi were performed by BLM, Tillamook Resource Area, qualified Botanist. Special status plant species surveyed for included: Species listed under the BLM Manual 6840 categories, Survey & Manage Species included in Survey and Manage Standards and Guidelines and Category Assignments (Jan 2001) and any species listed under the Endangered Species Act.

Special Status Species Found: None

Survey and Manage Species Found: Surveys were conducted to the protocols for each group (Survey Protocols for Component 2 Lichens v.2.0, Survey Protocols for Survey Strategy 2 Bryophytes v.2.0, Survey Protocols for Protection Buffer Bryophytes v.2.0, and Survey Protocols for Survey and Manage Strategy 2 v.2.0). In January 2001, a Record of Decision (ROD) for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standard and Guidelines was adopted. Although the species lists changed the Survey Protocols remained the same.

. Table 6 displays the species found within the Baker Creek Project area.

Table 6. Survey and Manage Species Found

SPECIES	PRESENT STATUS
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<i>Stenocybe clavata</i>	Category E
<u>Lobaria oregana</u>	A, in Calif. only
<i>Peltigera pacifica</i>	Category E
<u>Usnea longissima</u>	Category F

Stenocybe clavata is a category E Survey and Manage species. Manage all known sites for category E species is required (pg 12-13 of Standards and Guidelines, Jan 2001). Current and future known sites will be managed according to the Management Recommendation for the species. Since this category E species is located within a ground-base yarding unit it will require protection. This species has shown a tolerance to thinning operations with 60% crown closure. Protection of this known site will require a no touch zone. Chapter 2, section 2.2.1.1.1. describes the mitigation measures associated with this known site.

Peltigera pacifica is a category E Survey and Manage species. Manage all known sites for category E species is required (pg 12-13 of Standards and Guidelines, Jan 2001). Current and future known sites will be managed according to the Management Recommendation for the species. The *Peltigera pacifica* was found in the vicinity of the project area, but outside of the actual sale boundary and will not require management recommendation to protect the site.

Usnea longissima is, in Oregon, a category F species included in Survey and Manage Standards and Guidelines table 1-1, except in Curry, Josephine, and Jackson counties. Manage known sites for category F species is not required because the species are uncommon, not rare, and species within this category will be assigned to other categories or removed from Survey and Manage as soon as new information indicates the correct placement. Until that time, inadvertent loss of some sites is not likely to change the level of rarity, (page 13 and 14, Standard and Guidelines Jan. 2001).

Lobaria oregana is a Category A Survey and Manage Species in California only, (refer to Table 1.1 Record of Decision and Standards and Guidelines Jan. 2003) Manage known sites for this category A species is not required in Oregon.

Noxious Weeds found:

<u>Latin name</u>	<u>Common name</u>
<i>Hypericum perforatum</i>	St. Johnswort
<i>Cirsium vulgare</i>	bull thistle
<i>Ilex aquifolium</i>	English holly
<i>Senecio jacobaea</i>	tansy ragwort
<i>Cirsium arvense</i>	Canada thistle
<i>Rubus laciniatus</i>	evergreen blackberry

Rubus discolor
Cytisus scoparius

Himalayan blackberry
Scotch broom

All noxious weeds identified within the project area were Priority III (established infestations). These weed species are commonly found throughout Western Oregon tending to occupy areas of high light .

Additional information on the affected environment relative to the Special Status, Special Attention Species and Noxious Weeds can be found in the Biological Evaluation for Botanical Resources (project file, document # 51).

3.4.2. Forest (Adaptive Management Area and Riparian Reserve)

None of the areas proposed for density management are located within areas identified within the 15% Analysis Documentation (as updated 11/15/99) that was completed to assure conformance with the 15 percent Retention Standard and Guideline (Salem District RMP - pg. 48). All of the areas proposed for wildlife habitat enhancement, are located within the acreage identified within the 15% Analysis Documentation (as updated 11/15/99) as helping to meet the 15 % Retention Standard and Guideline.

For additional information on the affected environment relative to the Forest Resource, refer to Appendix 2.

3.5 Wildlife

The affected environment for the Wildlife Resource can be found in Appendix 5.

3.6 Fisheries

There is no current aquatic inventory data in the project area with the exception of the Nestucca. The Nestucca has a extensive set of aquatic inventory data, stream gauge data, temperature and other types of data.

Nestucca Watershed

There are approximately six acres of proposed density management in the Nestucca Watershed. The density management unit is located on a ridge top and is above McGuire Reservoir.

Table 7. Lists fish species in the Nestucca Watershed by name and status that are potentially located near the Baker Creek project areas.

Common Name	Scientific Name	Status
Oregon Coast coho salmon	<i>Oncorhynchus kisutch</i>	1. Federally listed - threatened 2. Magnuson Stevens Act -

		Essential Fish Habitat Species.
Oregon Coast steelhead trout	<i>Oncorhynchus mykiss</i>	Federal candidate
Oregon Coast chinook salmon	<i>Oncorhynchus tshawytscha</i>	Magnuson Stevens Act - Essential Fish Habitat Species.
Oregon Coast cutthroat trout	<i>Oncorhynchus clarki</i>	1. Federal candidate 2. BLM sensitive species
Pacific lamprey	<i>Lampetra tridentatus</i>	Bureau tracking
river lamprey*	<i>Lampetra ayresi</i>	Bureau tracking

*presence not verified

Oregon Coast coho salmon -

The proposed density management project would occur some 3.0 miles above any portion of the Nestucca with potential use by coho due to McGuire Dam which is a large impassable barrier.

The nearest portion of the Nestucca that currently has coho present is below the historic Meadow Lake dam site approximately 6.0 miles downstream of the project area. A pair of waterfalls below the Meadow Lake dam site appears to limit their current distribution. There are no recent records of adult or juvenile coho in the stream segment between the falls and McGuire Dam. Downstream of the falls there are high densities of rearing coho and adult spawning habitat in both the main Nestucca and tributary streams (RBA 2002)². Population numbers spawning survey counts, of Oregon coast coho salmon have been increasing in the last several years in the Nestucca basin.

Oregon Coast Chinook Salmon

Both spring and fall chinook are present in the Nestucca Watershed. Of the two, fall chinook has the greatest distribution. The eastern end of their distribution is at the falls described previously for coho. Chinook spawning in the Nestucca is predominantly in the main channel above the confluence of Elk Creek. Population of fall chinook appears to be stable or increasing.

Yamhill Basin Watershed

Table 8. Lists fish species in the Yamhill Watershed by their name and status that are located near the Baker Creek project areas.

Common Name	Scientific Name	Status
coho salmon	<i>Oncorhynchus kisutch</i>	Magnuson Stevens Act, Essential Fish Habitat Species.

² RBA Rapid Bio-Assessment Final Report is a snorkel survey conducted in the Nestucca Watershed in the summer of 2002 for the Nestucca Nescowin Watershed Council by Steve Trask (Bio Surveys LLC.)

Upper Willamette steelhead trout	<i>Oncorhynchus mykiss</i>	Federally listed - threatened
Upper Willamette chinook salmon	<i>Oncorhynchus tshawytscha</i>	1. Federally listed - threatened 2. Magnuson Stevens Act, Essential Fish Habitat Species.
cutthroat trout	<i>Oncorhynchus clarki</i>	1. BLM sensitive species
Pacific lamprey	<i>Lampetra tridentatus</i>	Bureau tracking
river lamprey*	<i>Lampetra ayresi</i>	Bureau tracking

*presence not verified

Warm water game fish are not native to the Coast Range sub-basin. Releases of warm water game fish by ODFW in the Yamhill River include bullhead, channel catfish, largemouth bass and crappie (Wevers *et al.*, 1992). Other nonnative species present in the Yamhill drainage include smallmouth bass, bluegill, pumpkinseed, warmouth, yellow perch, and brown bullhead. The Oregon chub, federally listed as endangered under the ESA, is present in the Willamette River Basin but it's only known population at this time is inside the Finley Wildlife Refuge (Wevers *et al* 1992

Density Management

Upper Willamette steelhead

Steelhead is the only anadromous salmonid native to the Yamhill Watershed. There is known/suspected spawning and rearing habitat in both Panther and Baker Creeks up until river mile post 10 (ODFW100k distribution Map and Coast Range Subbasin Fish Management Plan (Weaver, 1992). Presence of steelhead has been confirmed in Baker Creek up until river mile post 10. Density management units in the Baker creek subwatershed vary between 0.5 to 3.0 miles from confirmed steelhead locations. Rainbow Lake, a small reservoir, is downstream of all the density management units except for 7-2 and 7-3, and is a barrier to anadromous fish passage. There are two small harvest units in the Panther Creek drainage, which are approximately 2.0 miles above steelhead distribution. Within the Deer Creek drainage steelhead distribution is recorded approximately 11 miles downstream of the proposed density management units. (ODFW100k distribution Map, found at [HTTP://oregonstate.edu/dept/nrimp/information/fishmaps.htm](http://oregonstate.edu/dept/nrimp/information/fishmaps.htm)). Weaver, 1992 also shows low and fluctuating levels of Steelhead coming over Willamette Falls, between 1976 through 1989.

Upper Willamette Chinook

Chinook are not known to spawn in the Yamhill River system either currently or historically. A few rearing juvenile chinook have been recorded in the Yamhill river, just upstream of the city of McMinnville. ODFW has classified these as spring Chinook. Density management units in the Baker Creek and Panther Creek units are 9.5 miles above identified distribution. Density management units in the Deer Creek Drainage are approximately 19 miles above chinook

presence. In addition, because Chinook are not known to spawn in the watershed, only the rearing needs of juveniles should be considered.

Introduced Coho

Coho are not native above Willamette falls. However, they were introduced in 1920's and have established themselves in the watershed due to stocking efforts in the 1950's through 1980's. Coho distribution in the Panther and Baker Creek drainages is the same as steelhead distribution. The closest density management unit is 0.5 miles to the suspected-use by coho in Baker Creek, and 2.0 miles in Panther Creek. Within the Deer creek drainage coho are 2.0 miles away from a density management unit.

Wildlife Habitat Enhancement

Upper Willamette steelhead/Upper Willamette Chinook/Coho

All of the streams associated with the 110 acres in Riparian Reserves are above man-made reservoirs (Haskins and Carlton), barrier falls and/or smaller streams and therefore at least approximately 0.25 miles from the nearest potential habitat of Upper Willamette steelhead, and coho and over 9.0 miles to Upper Willamette chinook.

CHAPTER 4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Introduction

This Chapter shows the changes that can be expected from implementing the action alternative or taking no action at this time. The “no action” alternative sets the environmental base line for comparing effects of the action alternative. The environmental effects (changes from present baseline condition) that are described in this chapter reflect the elements of the environment (soil, water, vegetation, wildlife, fisheries). For those other resources or values which review is required by statute, regulation, Executive Order, or policy, Appendix 3 contains the appropriate documentation as to the effects of the proposed action on those resources or values.

For a full discussion of the physical, biological, and social resources of the Salem District, refer to the FEIS (Final Environmental Impact Statement), dated September, 1994, for the Salem District Resource Management Plan. The discussion in this document is site-specific and supplements the discussion in the FEIS.

4.2 Soils

4.2.1. Alternative 1 (Proposed Action)

Project planning and implementation of BMPs would minimize the magnitude and duration of disturbance and help maintain beneficial properties of soils. Fragile areas such as landslide-prone slopes and highly erosive soils that could be degraded by intensive forest management were removed from management consideration during pre-planning and project development.

The proposed Wildlife Habitat Enhancement project is not considered ground disturbing and would therefore not have any affect on the soil resource. The following analysis is for the proposed Density Management project.

Direct and Indirect Effects

1. Roads.

There would be no new permanent road construction, and all roads used for the timber harvest would be decommissioned. Project action would include constructing approximately 1.6 miles of new temporary roads and improving approximately 1.6 miles of existing road. Upon completion of logging, 1.6 miles of existing road would be decommissioned. Methods of decommissioning would generally include blocking, sub-soiling, water barring, and planting for erosion control.

Temporary road construction and decommissioning would result in the loss of some vegetation, increase compaction and erosion and reduce soil productivity. However, these short-term road-

related soil impacts would be relatively small. Improvement of existing roads would cause only minimal impact since most of the compaction and displacement have already occurred. Roads to be used would be located mainly on gentle slopes on mountain ridges and benches; soils would be exposed for only short period (at most three winters); erosion control measures would be implemented soon after harvesting is completed.

2. Logging

Cable yarding 408 acres would result in mainly light compaction in 4 feet wide yarding corridors and a small amount of moderate or heavy compaction on landings. Most of the landings would be located wholly or partially within roadbeds. Cable yarding would disturb about 3% of the harvest area (12 acres) and result in minimal soil productivity loss (less than 1%).

Ground-based yarding on approximately 264 acres (including about 50 acres within riparian reserves) would result in soil disturbance on an estimated 8% of the treatment area (21 acres). It is assumed that one-half of the skid roads would be on existing skid roads and that none of the landings currently exist, which would reduce the amount of new soil disturbance resulting from this project to 5% of the treatment area (13 acres). This amount of disturbance is within the BMP limits set in Salem District RMP. Skid roads would not be subsoiled after harvest to avoid root damage to adjacent trees. Ground-based equipment would not be allowed within riparian reserves except where they are able to operate from existing roads. Assuming that yarding would occur when soils are dry, ground-based yarding would result in mostly moderate amount of soil compaction and displacement on skid roads and mostly heavy compaction and displacement on landings. Soil erosion levels are expected to be low since most of the ground slope is less than 30%, and upon completion of logging the skid trails will be blocked and water barred to reduce erosion.

Cumulative Effects

1. Roads

There would be approximately 1.6 fewer miles of BLM roads within these watersheds. The effects of this reduction in road mileage would be positive but minimal.

2. Logging

Logging will increase the overall compaction on the ground-based harvest units from the construction of new skid roads and reuse of existing skid roads. Skid roads would not be subsoiled. The total increase in compacted soil will be approximately 13 acres, which is approximately 0.02% of the total area of these watersheds.

4.2.2. Alternative 2 (No Action)

Under this alternative, there would be no timber hauling, road construction or harvesting activity that could increase ground disturbance, erosion or sedimentation. There also would be no decommissioning of existing roads associated with the project. Current trends of change would continue. Residual effects of past road development, timber harvest, and other land use activities would continue to affect existing stream flows and water quality conditions.

Cumulative Effects

As no management activities will be implemented under this alternative, no cumulative effects to soils due to management treatments would occur.

4.3 Water

4.3.1 Alternative 1 (Proposed Action)

The proposed Wildlife Habitat Enhancement project would have no effect on water quality or quantity in any of the affected watersheds. This would not be a ground-disturbing activity, and the increase in numbers of standing snags and large woody debris on the ground would have no effect on any hydrologic process.

The effects of the proposed Density Management project on water quality and quantity would not exceed those analyzed in the RMP. Any sediment or turbidity impacts from road construction, road improvement, and culvert removal would be minimal. Most existing roads and planned roads are on ridgetops or benches, on mostly gentle slopes located far from drainage channels. Untreated riparian reserves would effectively filter most sediment coming off roads before reaching streams. Ground disturbing activities would be restricted to dry periods. None of the new road construction and very little of the existing roads to be improved are within riparian reserves. The single culvert removal involves an old log culvert that has deteriorated and no longer functions. The stream at this location has been flowing over the top of this culvert for some time, eroding the road fill and transporting sediment downstream. Removal of the log culvert and restoration of the stream channel would reduce sediment delivery to natural levels.

Sediment impacts from timber harvest activities are expected to be minimal. There would be no logging on steep slopes near streams where there is high potential for mass wasting. Skid trails and ground-based yarding equipment would generally be prohibited within riparian reserves. Streams would have minimum 50-foot no-harvest buffers except in the area proposed for conifer release under AMA learning objective #2.

There would be no impacts to water temperature, streamflows or stream channel stability as a result of this alternative. No-harvest buffers would protect streams from temperature increases resulting from shade tree removal. The canopy cover would generally not be reduced below 40%, and any associated reduction in evapo-transpiration and increase in streamflows would be minimal. Requiring full log suspension within 25 feet of streams would protect stream banks from disturbance and help to maintain channel stability.

Cumulative Effects

The proposed action plus past, present, and reasonably foreseeable forest management actions have been analyzed to determine cumulative effects in the Baker Creek, Panther Creek, Upper Deer Creek and Upper Nestucca River sixth-field watersheds.

The following conditions were observed:

The wildlife habitat enhancement proposal is not a ground-disturbing activity, would not have any direct or indirect effects on water resources, and therefore would not contribute to any cumulative effects on water resources.

The density management proposal is for a density management treatment on approximately 647 acres, all within the rain-dominated zone (no rain-on-snow effects).

No-harvest buffers would be placed on all project streams (50-feet on both sides of the streams), with the exception of the portion of unit 25-1 that is included in AMA learning objective #2. Full log suspension would be required within 25 feet of all streams.

BLM manages 10-12% of the area within the Baker Creek, Panther Creek, and Upper Deer Creek watersheds, and 58% of the Upper Nestucca River watershed. The crown closure is 75% or higher for the majority of these BLM lands. After the proposed treatment, the crown closure is expected to be around 40% for treatment areas.

Project area streams are currently in a stable condition, and water quality in the project area and vicinity is generally good. The main water quality concern in the affected watersheds is for water temperature in the North Yamhill River, which is approximately 19 miles downstream from the nearest treatment area.

The amount of existing roads would be reduced in the Upper Deer Creek watershed by approximately 0.5 miles, and in the Baker Creek watershed by approximately 1.1 miles. There would be no increase in the amount of permanent roads.

Only one of the existing roads and none of the planned temporary roads under the proposed action that would be used in the project area cross any streams. The only instream work would involve removal of an existing failed log culvert that is contributing sediment downstream.

The amount of compaction in ground-based units would be increased by approximately 13 acres.

While timber harvest and road construction can contribute to increased streamflows, the proposed density management treatment is not expected to measurably affect streamflows within the affected sub-watersheds. Most studies showing stream flow increases were done in small watersheds that had been extensively clearcut, often ridge top to stream edge. Few studies have been done in the Pacific Northwest looking at the effects of thinning and the retention of streamside buffers on streamflows. One research project near the city of Newport Oregon,

studied a small watershed that was treated using three clearcuts, while retaining a stream buffer of 50-100 feet on each side of the stream along the main channel. Researchers found no changes in peak flows, even during fall and spring storms (Hall *et al.* 1987).

The project action is for thinning, not regeneration harvest, while leaving 50 foot no-harvest stream buffers. About 40% of the canopy would be retained with the treatment. This amount of vegetation removal should have little or no effect on stream flow in the affected watersheds.

In summary, considering the above factors, and the known and anticipated actions within the affected watersheds, the risk for this proposal to cumulatively contribute to overall negative effects to hydrologic processes or water quality in these watersheds is low. The anticipated actions are expected to maintain the condition of these indicators, except for the road density. Any alterations in peak flows, storm flow, and low flows would not be measurable.

4.4. Vegetation

4.4.1. Special Status and Noxious Weed

4.4.1.1. Direct, Indirect and Cumulative Effects - Alternative 1

Groundbase yarding can be expected to disturb the litter layer, soil, and woody debris to a greater extent than would cable yarding. Based on recommended design features, no Survey and Manage species found growing on those substrates within the project area, would be negatively impacted.

Decommissioning of roads should have no additional effect to S&M species.

No appreciable increase in the noxious weed / invasive exotics identified during the field surveys is expected to occur. Within the thinning units, any increase that does occur should be mostly confined to road corridors and would be expected to decrease over time as native species re-vegetate.

There are no anticipated positive or negative cumulative effects to the botanical resource if the proposed action is implemented.

4.4.1.2 Direct, Indirect and Cumulative Effects - Alternative 2

No adverse impacts to the S&M species found in these units would be expected to occur under this alternative. None of the species found are restricted to a single ecological condition and so are not dependant upon management of forest stands to maintain their habitat.

Since there are no ground disturbing or light increasing actions associated with this alternative, weed populations are expected to decline or at least remain stable.

There are no anticipated positive or negative cumulative effects to the botanical resource if Alternative 2 is implemented.

4.4.2 Forest Vegetation

4.4.2.1. Direct, Indirect and Cumulative Effects - Alternative 1

The density management treatment would not impact any stands which have been identified as currently exhibiting LSF characteristics and mapped to meet the 15% retention S&G. For a detailed discussion of the direct, indirect and cumulative effect relative to the forest resource within both the AMA and RR land use allocation, please refer to Appendix 2.

Road decommissioning using a winged sub-soiler could cause injury to the residual tree roots of those trees that come in direct contact with the sub-soiler. The long-term effects of subsoiling on tree health is unknown, but is thought to be minimal as long as a tree does not have too many of its roots severed. Since the subsoiling would only occur on one side of the tree, it is unlikely that trees would actually be killed. Damage to tree roots can make a tree more susceptible to attack from bark beetles, in isolated cases this may occur. Because the forest canopy would change relatively little with the proposed road decommissioning there would not be anticipated differences in tree growth or regeneration. The removal of culverts would not directly effect the forest vegetation.

The effects of the wildlife habitat enhancement projects on forest vegetation are detailed in Appendix 5.

The effects of implementing the proposed action on Aquatic Conservation Strategy Objectives are described on pages 36-38 of Appendix 2.

4.4.2.2. Direct, Indirect and Cumulative Effects - Alternative 2

The direct indirect and cumulative effects of implementing alternative 2 on forest vegetation can be found in Appendix 2.

4.5. Wildlife

4.5.1. Alternative 1

A full disclosure of the direct, indirect effects and cumulative effects to wildlife can be found in Appendix 5.

4.5.2. Alternative 2

A full disclosure of the direct, indirect effects and cumulative effects to wildlife can be found in Appendix 5.

4.6. Fisheries

4.6.1. Direct and Indirect Affects - Alternative 1

4.6.1.1. Density Management

4.6.1.1.1. Nestucca Watershed

No measurable direct or indirect effects are predicted to occur in the Nestucca Watershed if the proposed action is implemented. The following rationale support this conclusion:

- Only six acres that is located on a ridge, outside of riparian reserves will be thinned.
- Any sediment entering McGuire reservoir will be permanently stored there, and will not affect fish that are downstream of the reservoir.
- Water is released from the cooler bottom of the pool area which negates any temperature change in surface waters.

Oregon Coast coho salmon

The project area within the Oregon Coast coho ESU covers approximately 6 acres on a ridge top, which is located outside of riparian reserves. In addition, the density management unit is 3.0 miles above a major reservoir which is a barrier to fish, and the closest confirmed coho presence is 6.0 miles downstream. There is no chance of sediment impacts, because there is no treatment in Riparian Reserves. The proposed project would be “*NO EFFECT*” upon Oregon Coast coho salmon and would not affect their EFH .

Chinook salmon

Chinook habitat for spawning begins approximately 7.0 miles below the 6.0 acre harvest unit described for coho above. For the same reasons as coho salmon, there are no anticipated impacts (“*NO EFFECT*”) to chinook Essential Fish habitat “EFH”

4.6.1.1.2 Yamhill Watershed

There is minimal potential for measurable direct or indirect effects to fish or their habitats to occur in the Yamhill Watershed if the proposed action is implemented. There will be no notable change in stream temperature or increases in turbidity. The following rationale support this conclusion:

- Seasonal restrictions on harvest and haul which greatly reduces the chances of road sediment moving into stream channels in a measurable quantity.
- No new road construction in riparian reserve.

- No harvest buffers will be placed on all identified streams. This should prevent impacts to shading and provide undisturbed forest vegetation to reduce or eliminate the transfer of soils to the stream channel.
- Full suspension over stream channels and 25 feet on both sides provides for continuing stream bank stability.
- The closest harvest unit to upper Willamette steelhead is approximately 0.5 miles.

The reduction of 1.6 miles of road within the watershed would result in reduced access to some stream segments by OHV's. This could reduce some sediment from entering a watercourse.

Upper Willamette steelhead

Project mitigation measures and the location of Upper Willamette steelhead relative to the project units, make the likelihood of impacts to the fish or their habitat negligible. These mitigation measure include: the use of no harvest buffers on all streams; the use of dry season harvest and haul; (generally June through September), the use of authorized haul routes; no new road construction within the riparian reserves. The distances to habitat from the harvest units vary from ½ to 3.0 miles.

The potential of adverse impacts to Upper Willamette steelhead are related to short-term increases in sediment into Deer Creek due from hauling over perennial channels. However, with the use of dry season haul any inputs of fine sediments should be negligible. The small amounts of sediment that does enter the streams should be stored above the areas used by rearing steelhead, because of generally low stream gradients. The primary areas of concern for steelhead are water temperature, sediment and Large Woody Debris (LWD) as a habitat component. These important habitat components will not be directly affected by the proposed action, and the indirect effects are anticipated to be negligible.

Alternative 1 *MAY AFFECT* and is *NOT LIKELY TO ADVERSELY AFFECT* Upper Willamette steelhead due to the project planning and mitigation measures.

Upper Willamette chinook

The same project mitigation measures described above for steelhead, will substantially reduce any potential impacts to chinook. Because the closest known population of Chinook, is 19 miles downstream in the Deer Creek watershed, and 9.5 miles in Panther and Baker Creek drainages, the likelihood of any effect is extremely minimal.

Alternative 1 the proposed density management project would be of "*NO EFFECT*" upon Upper Willamette chinook and would not affect their EFH .

Upper Willamette Coho salmon

Within the Deer, Panther and Baker Creek watersheds coho distribution and habitat needs are similar to those for steelhead and the potential impacts to habitat are similar. The only exception

is the distribution of coho in the Deer Creek Watershed, coho are believed to spawn and rear to within 2.0 stream miles of the nearest harvest unit and 1.5 miles from the haul route out of units 35-1, 35-2, 1-1, 1-2 and 7-1. With the mitigation measures planned into this project, especially dry season harvest and haul, there are *No Adverse* impacts anticipated to coho Essential Fish Habitat.

Other Special Status Species of Fish within the Nestucca and Yamhill Watersheds:

Implementation of Alternative 1 would not be expected to result in the loss of population viability for any Special Status Species that may occur in the project area, or result in the need to elevate their status to any higher level of concern including the need to list under the ESA.

4.6.1.2. Wildlife Habitat Enhancement

When WHE Projects occur within the Riparian Reserve land allocation, they would help promote the attainment of ACS objectives number 8 and 9, as described within the Salem District RMP and NWFP. The species composition and structural diversity of the riparian communities would be restored, as would processes such as nutrient and coarse wood cycling.

Upper Willamette steelhead/Upper Willamette Chinook/Coho

As the proposed action is not ground disturbing, and no changes to the average level of shading will occur within these treatment areas, the project has been determined to be *NO EFFECT* on the Upper Willamette steelhead or Upper Willamette Chinook. There is no need to conference over Magnuson-Stevens Essential Fish Habitat for coho or chinook. In addition, it would not be expected to adversely impact (result in a loss in population viability) or elevate their status to any higher level of concern.

Other Special Status Species

No species identified under the Bureau's 6840 manual Special Status Species policy are expected to be adversely impacted by the wildlife habitat enhancement treatments, resulting in the need to elevate their status to any higher level of concern, including the need to list under the ESA.

4.6.2. Cumulative Effects for Alternative 1

Cumulative Effects: The BLM 1998 *Deer Creek, Panther Creek, Willamina Creek and South Yamhill Watershed Analysis* identified water temperature, landslides, stream bank erosion, low flows, and stream channels containing little or no complexity as likely water quality problems. Past and present actions, primarily timber harvest, road construction, and residential development, have generally resulted in few legacies (i.e., larger green trees, *snags*, and *coarse woody debris*) being retained from the previous stands and degraded riparian habitat. These actions have influenced the hydrologic processes of the watershed to the point that portions of the stream channels are at risk of not functioning properly. Stream buffers on private lands are typically on third-order and larger streams, and are quite narrow (usually in width of one normal tree spacing). Many of the buffers on private lands have been wind thrown. The trend on private land is to harvest stands while they are still well within the closed sapling stage, maintaining primarily Douglas-fir plantations. About 91% of the private lands are in the closed sapling, open

sapling, early grass-forb and non-forest condition. The amount of large woody debris of sufficient size and location that can enter streams is much less than necessary to sustain current conditions. As older pieces of wood currently in the system decompose or are transported out and the size and volume of available new pieces decreases due to the land being used for homes, fields, and timber production, the current condition would continue to degrade. Historic and current dams as well as other barriers within the watershed may have greatly reduced native salmonid populations, currently the trend is reversing with more of these historic barriers being removed or modified to provide fish passage and thereby access to habitat.

Future management actions on federal land would be in accordance with approved land management plans which contain management direction to maintain or restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Due to the low levels of BLM ownership within the analysis area, density-management thinnings or restoration activities implemented on federal land within portions of the watershed have limited potential to beneficially impact ecosystem function throughout the watershed. The potential adverse effects from either proposed project would not contribute to the anticipated long-term degradation of fish habitat within the watershed.

4.6.3. Direct and Indirect Affects - Alternative 2

There would be no direct or indirect effects to fish if Alternative 2 is selected. The expected benefits from density management treatment and road decommissioning to attaining the ACS objectives and the development of some features of late-seral stage habitat would be expected to occur in a slower time frame than with alternative 1.

The potential of indirect effects to fish are related to the introduction of sediments from the harvest or hauling operations. These potential impacts are anticipated to be negligible and are anticipated to occur during the projects implementation.

4.6.4. Cumulative Effects for Alternative 2

Fish populations and fish habitat are likely decreasing in both number and quality throughout the Yamhill watershed. This continuing gradual degradation or maintenance of the current conditions of fish habitat is likely to continue for the foreseeable future. Local efforts by the Yamhill Basin Council and the State of Oregon Salmon Recovery Plan are in place to reverse or stabilize the declining trends, and will have a positive influence in portions of the watershed. However, these efforts are largely based on volunteer activity, and to date there is no measurable indicator of success. If Alternative 2 is selected, it will not have any measurable impact on the cumulative effects to fisheries in the Yamhill Basin. Introduced species within the watershed including warm water game fish have likely had a detrimental impact on native populations within these watersheds. Changes such as temperature increases favor the introduced species. The one trend that is measurably increasing is the access to historic habitat by providing fish passage to currently inaccessible habitat.

4.7 Conformance with Land Use Plans, Policies and Programs

Alternative 1 (Proposed Action), and Alternative 2 (No action), unless otherwise noted, are in conformance with the following documents which provide the legal framework, standards, and guidelines for management of BLM lands in the Tillamook Resource Area:

- * *Salem District Record of Decision and Resource Management Plan, May 1995*, pages 19-20 (AMA objectives), 5-6 (ACS Objectives), 9-11 (Riparian Reserves), 22 (Air Quality), 22-24 (Water and Soil), 24-27 (Wildlife Habitat), 28-32 (Special Status Species and Habitat), 36 - 37 (Visual Resources), 41-45 (Recreation), 49-50 (Special Forest Products), 62-64 (Roads), 64-67 (Noxious Weeds and Fire/Fuels Management), and Appendix C1-C8 (Best Management Practices).
- ACS Objectives and Riparian Reserves Objectives: The action alternative is predicted to result in the maintenance and/or restoration of ACS objectives (Appendix 2, pages 36-38). Both of the alternatives would be expected to meet the Riparian Reserve objective to “provide habitat for special status, SEIS special attention and other terrestrial species.” The action alternative, which would thin approximately 216 acres of Riparian Reserve, would result in a more diverse, wider array of habitat types within the Riparian Reserves as the treated portions respond to the thinning with increased windfirmness, growth and vigor. Design features of the action alternative would help minimize the risk of adverse impacts to populations of concern.
- AMA Objectives: Alternative 1 would accelerate the development of some late-successional forest structural features, including large trees, gaps in the canopy, snags and down wood, various levels of overstory tree densities, and various levels of understory development, and would enhance the overall diversity of the area. Also, the action alternative would provide social and economic benefits to local communities through the supply of timber to local mills and contract work associated with the road decommissioning projects. Alternative 2 appears not to be in conformance because it does not contain a provision for the supply of timber or contract work that would contribute to the local economy.
- Air Quality Objectives: Any prescribed burning or burning of slash at roads and landings would adhere to smoke management/air quality standards.
- Water and Soils Objectives: Applicable Best Management Practices as described in the RMP, (Appendix C1-C10) are incorporated into the project design for the action alternative and assure the maintenance of water quality and reduce the impacts to soil productivity while meeting other resource management objectives.

- Wildlife Habitat Objectives: Project design features for the density management proposals in Alternative 1 assure consistency with wildlife habitat objectives. These design features include but are not limited to providing snag, green tree and down wood habitat features as well as requirements to protect existing CWD and reserving all merchantable-sized hardwoods.
- Special Status and SEIS Special Attention Species and Habitat Objectives: Both of the alternatives are predicted not to contribute to the need to list or elevate their status to a higher level of concern (Chapter 4 and Appendix 5)
- Visual Resources Objectives: Both of the alternatives are consistent with the visual resources management objectives. (Appendix 3)
- Noxious Weeds: Both of the alternatives are predicted to avoid the introduction and spread of noxious weeds. Alternative 1 would likely result in an increase in the number and possibly diversity of weed species in the project area with these species returning to their low level as the native vegetation returns. Alternative 1 contains design features to minimize the introduction and spread of noxious weeds, including the blocking of roads to OHV traffic (Chapter 2).
- Fire/Fuels Management: Alternative 1 contains fuel management activities that would be conducted in such a manner as to adhere to smoke management/air quality standards and meet ACS objectives. (project record # 47)
- Best Management Practices: Alternative 1 contains applicable Best Management Practices described in Appendix C1-C10 of the RMP.
- * *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl (April, 1994).*
- The RMP is consistent with the Record of Decision (*Salem District Resource Management Plan/Final Environmental Impact Statement, September, 1994, Chapter 4-96*). Since the action alternative is consistent with the RMP, this alternative is believed to be consistent with the Record of Decision.
- * The Botany and Wildlife analysis are consistent with the *Record of Decision for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl. (January, 2001)*

- * Northern Coast Range Adaptive Management Area Guide, January 1997, pp. 7-14 and 49-50: Alternative 1 would accelerate the development of some late-successional forest structural features and provides social/economic benefit to local communities (Chapter 4).
- * Late-Successional Reserve Assessment for Oregon's Northern Coast Range Adaptive Management Area, January 1998, pp. 44-52, 82-83, 86-87, 92-98: Alternative 1 would accelerate the development of some late-successional forest structural features; would enhance the overall level of diversity within the area; and would develop windfirmness (Chapter 4; Appendix 2)
- * The *Deer Creek, Panther Creek, Willamina Creek, and South Yamhill Watershed Analysis (WA)* supports the proposed activities. Recommendations contained on pages 74-85 of the WA were considered in the development the Baker Creek Project. All aspects of the project are also consistent with the Nestucca Watershed Analysis and the North Yamhill Watershed Analysis.
- * *Coastal Zone Management Act*, as amended: The project area is **not** located within Oregon's Coastal Zone boundary. However, the proposed action appears to be consistent with the applicable statewide planning goals identified in the Oregon Coastal Management Program.
- * *Oregon Forest Practices Act*: Both of the alternatives are consistent with the Oregon Forest Practices Act. Various project design features within the alternatives assure this compliance.
- * *Endangered Species Act*:
 - In accordance with regulations pursuant to Section 7 of the Endangered Species Act of 1973, as amended, formal consultation with the USFWS concerning the potential impacts of the Baker Creek Density Management and Wildlife Habitat Enhancement project upon the spotted owl, marbled murrelet and bald eagle has been completed. This was accomplished by including the Baker Creek Density Management and Wildlife Habitat Enhancement project within the annual programmatic habitat modification biological assessment prepared by the interagency Level 1 Team (terrestrial subgroup) for the North Coast Province, rather than the preparation of a project site-specific Biological Assessment. The proposed action alternative is consistent with definitions for *light to moderate thinning* as found in the programmatic BA. Should the project not be implemented within FY 2004 as currently planned but rather in a subsequent year, the project would likely be resubmitted for inclusion in the next appropriate programmatic consultation.

- In accordance with regulations pursuant to Section 7 of the Endangered Species Act of 1973, as amended, consultation with the USFWS concerning the potential impacts of implementing the Baker Creek Wildlife Habitat Enhancement Project upon the spotted owl, marbled murrelet and bald eagle has been completed. Those portions of the Baker Creek Wildlife Habitat Enhancement project which involve CWD creation were included within the programmatic “habitat modification” biological assessment prepared by the interagency Level 1 Team (terrestrial subgroup) for FY 2003-2004 projects within the North Coast Province which may modify the habitat of bald eagles, northern spotted owls and marbled murrelets (*USFWS Biological Opinion reference 1-7-02-F-958*). Should the project not be implemented within FY 2004 as currently planned but rather in a subsequent year, the project would be resubmitted for inclusion in the next appropriate programmatic consultation.

- Section 7 Consultation with the National Marine Fisheries Service (NOAA Fisheries) will be initiated as the proposed project action has been determined to be a “May Affect” to Upper Willamette Steelhead. The proposed project has been determined to have no adverse impact to Essential Fish Habitat as described in the Magnuson-Stevens Fishery Conservation and Management Act (2000), for any population of Chinook or Coho salmon. Informal consultation with NOAA Fisheries, NMFS is anticipated to be initiated project specifically in 2003.

CHAPTER 5.0 LIST OF PREPARERS

The list of interdisciplinary team members that contributed to the preparation of the environmental assessment is contained in Table 9.

Table 9. List of preparers. This table contains a list of those individuals that prepared or contributed to the environmental analysis as documented in Environmental Assessment Number OR-086-03-02

Name	Title	Resource
Carolina Hooper	Forester	Project lead, writer/editor,
Kurt Heckeroth	Forestry Technician	Botany
Walt Kastner	Forester	Silviculture
Matt Walker	Fisheries Biologist	Fish
Bob McDonald	Natural Resource Specialist	Soils and Water, GIS (Graphic Information System)
Marc Pierce	Forester	Logging Systems
Steve Bahe	Wildlife Biologist	Wildlife
Katrina Symons	NRSA	cultural resources and NEPA
Carl Symons	Civil Engineering Tech.	Engineering

GLOSSARY

ACS - See “Aquatic Conservation Strategy.”

Adaptive Management Area - Landscape units designated for development and testing of technical and social approaches to achieving desired ecological, economic, and other social objectives.

AMA - See “Adaptive Management Area.”

Aquatic Conservation Strategy - The Aquatic Conservation Strategy was developed to restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them on public lands. The strategy would protect salmon and steelhead habitat on federal lands managed by the Forest Service and the Bureau of Land Management within the range of the Northern Spotted Owl. The Aquatic Conservation Strategy is designed to meet nine objectives. Compliance with the Aquatic Conservation Strategy objectives means that an agency must manage the riparian-dependent resources to maintain the existing condition or implement actions to restore biological and physical processes within their ranges of natural variability.

BMP - see Best Management Practices

Best Management Practices - Those practices utilized by the Bureau of Land Management (located in appendix C of the *RMP*) that are intended to maintain or improve water quality and soil productivity.

Coarse Woody Debris - Tree or portion of a tree that has fallen or was cut and left in the woods to contribute to a variety of ecosystem functions. Usually refers to pieces at least 20 feet long and 20 inches in diameter at the large end.

CWD - See “Coarse Woody Debris.”

DBH - See “Diameter at Breast Height.”

Diameter at Breast Height - The diameter of a tree 4.5 feet above the ground on the uphill side of the tree.

Endangered Species Act (ESA) - An Act of Congress in 1973 that defines the criteria for species that are in danger of extinction throughout all or a significant portion of its range.

Environmental Assessment - A systematic process of developing reasonable alternatives and predicting the probable environmental consequences of a proposed action and the alternatives.

Environmental Impact Statement - A formal document to be filed with the Environmental Protection Agency that considers significant environmental impacts expected from implementation of a major federal action; a detailed written statement as required by section 102(2)(C) of the [National Environmental Policy] Act, as amended (40 CFR 1508.11).

ESU - see “Evolutionarily Significant Unit”

Evolutionarily Significant Unit - A population that is reproductively isolated from other conspecific populations and represents an important component in the evolutionary legacy of the biological species.

Geographic Positioning System (GPS) - A hand-held electronic instrument that allows the user to locate his/her position on the surface of the earth, by using information gathered from satellites.

IDT - See “Interdisciplinary Team.”

Interdisciplinary Team - A group of resource specialists who conduct the environmental assessments.

Major Issue - Also referred to as “significant issue.” A major point of discussion, debate, or dispute about environmental effects of the proposed action. For the purposes of the National Environmental Policy Act, a major issue or significant issue is an issue within the scope of a proposed action, which is used to formulate alternatives, develop mitigation measures, or is important in tracking effects.

MMBF - Million Board Feet. A board foot is a unit of measure used to quantify commercial lumber; it measures 1 foot x 1 foot x 1 inch.

MBF - Thousand Board Feet. A board foot is a unit of measure used to quantify commercial lumber; it measures 1 foot x 1 foot x 1 inch.

National Environmental Policy Act - The basic national charter for the protection of the environment. It establishes policy, sets goals (section 101), and provides means (Section 102) for carrying out the policy.

NEPA - See "National Environmental Policy Act"

New road construction - Construction of a road where there previously has not been a road. i.e.: no indication of an historic road bed (indicators may include: excavation scarring and human caused alteration of the topography; vegetation such as alder growing in or along the old road; indications of a rocked surface or soil compaction; or altered flow of surface water not attributed to natural causes.

O & C Lands - Lands which were granted to the Oregon and California Railroad Company in 1866 but which have been revested to the federal government.

Permanent road - Permanent roads are those roads that are used and/or not decommissioned after the contract is terminated.

Road - A transportation facility originally constructed to be used primarily by vehicles having four or more wheels. It is documented as such by the owner, and [may be] maintained for regular and continuous use (CFR 9100). The level of maintenance is generally dependent on available funding.

Road Reconstruction - Work done, in varying amounts, to an existing road (bed) which restores it to a condition that meets present need and construction standard. Reconstruction may incorporate some of the following: brushing, clearing and grubbing, excavation, widening, rocking, blading, subgrade compaction,

RMP - see Salem District Record of Decision and Resource Management Plan

RR - see riparian reserve

Riparian Reserves - A Federal (BLM or USFS) land-use allocation which overlays all other land allocations. They are lands along streams and unstable and potentially unstable areas where special standards and guidelines direct land use.

Riparian Zones - Those parts of the riparian reserves where actual riparian conditions exist.

Salem District Record of Decision and Resource Management Plan (May 1995) - The Management Plan that addresses resource management on all Bureau of Land Management administered land within the Salem District.

Scoping - An ongoing process to determine the breadth and depth of an environmental analysis.

Snags - Any standing dead, partially dead, or defective (cull) tree at least 10 inches in diameter at breast height and at least 6 feet tall. A hard snag is composed primarily of sound wood, generally merchantable. A soft snag is composed primarily of wood in advanced stages of decay and deterioration, generally not merchantable.

Soil compaction - The increase in soil density (reduction of total porosity) that results from the rearrangement of soil particles in response to applied external forces such as traffic by heavy machinery.

Soil displacement - The mechanical movement of the upper organic and mineral surface by equipment and movement of logs. It involves excavation, scalping, exposure of mineral soil and burial.

Survey and Manage (S&M) - A group of species that were defined in the Northwest Forest Plan that have special protection measures associated with them.

Temporary road - Temporary roads are those roads that used for longer than one dry season but are decommissioned by the end on the contract.

Timber Production Capability Classification - An inventory designed to identify sites capable of sustaining intensive timber management without degradation of their productive capacity. Legislative requirements and BLM policy specify that timber harvests will be planned and carried out only on lands which can be managed without environmental degradation of the site.

TMDL - Total Maximum Daily Load is the total amount of a pollutant that can enter a water body without violating water quality standards.

Units of Measure - A measure is an indicator of a variable; a yardstick to determine how the variable is moving (being changed or being altered) relative to an established base point and how the variable is being affected or the change occurring because of the proposed action/alternatives.